PATENT ABSTRACTS OF JAPAN

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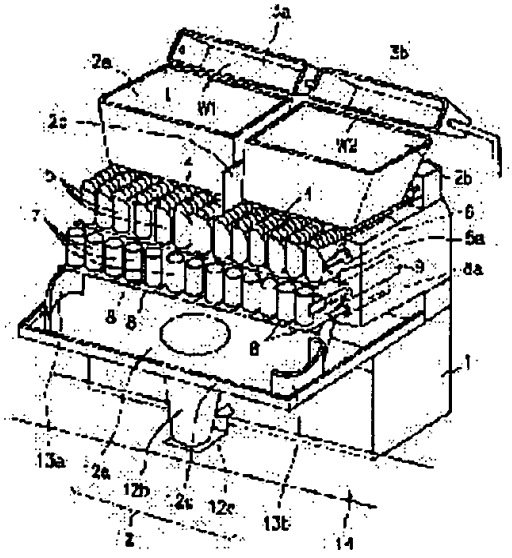
(54) COMBINED-WEIGHT MEASURING APPARATUS

(57)Abstract:
PURPOSE: To measure a mixture of various kinds of articles respectively by a predetermined weight with a predetermined dispensing ratio.
CONSTITUTION: The measuring mechanism in the lower stage following the hoppers 2a, 2b to which articles W1, W2 are supplied independently is constituted of two systems. Each article W1, W2 is separated for every predetermined amount by a pool hopper 5 and measured by a measuring hopper 7. A control part selects the measuring hopper 7 so that each article W1, W2 becomes a predetermined weight when the measuring values of the separated articles are combined. The articles W1, W2 in the measuring hoppers 7 are mixed on a collecting device 12 and discharged outside. The articles W1, W2 are discharged respectively with a predetermined dispensing ratio.



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CLAIMS

[Claim(s)]
[Claim 1] The measured object (W1) of a form different, respectively, the injection hopper (2a) with which (W2) is supplied according to a system, and (2b), Every according to a system in the lower berth of this injection hopper, respectively The pool hopper which is formed, is formed in the shape of telescopic, carries out the specified quantity reservoir of the measured object, and is supplied to the lower berth (5), [two or more] The measurement hopper which measures the measured object of the specified quantity which is prepared in the lower berth corresponding to each of this pool hopper, is formed in the shape of a cartridge, and is supplied from this pool hopper, and is supplied to the lower berth by being chosen (7), The control section which performs combination used as a predetermined weight and chooses the corresponding measurement hopper according to each system about the measured object measured with this measurement hopper (20), The combination weigh machine characterized by providing the set equipment (12) discharged outside after gathering the measured object supplied from the measurement hopper by which selection was carried out [aforementioned].

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] this invention relates to the combination weigh machine which discharges measured objects, such as food, outside for every constant-rate measurement.
[0002]
[Description of the Prior Art] What is shown in drawing 5 is the perspective diagram showing the combination weigh machine of Japanese Patent Application No. No. 203535 [three to]. As for this combination weigh machine, the measured object W by which the injection hopper 42 was formed and has been conveyed by conveyer 43 is thrown into the topmost part of the equipment case 41. Two or more conveyance screws 44 are located in a line, and are arranged at the lower part of the injection hopper 42. This conveyance screw 44 conveys the measured object W to the front-face side of equipment. The cylindrical shape-like pool hopper 45 is respectively formed in the conveyance screw 44 point position. Two or more these pool hoppers 45 are laid on bottom plate 45a of fixation in a case 41, where the measured object W is held, they move ahead from bottom plate 45a by extension of a cylinder 46, and they drop the measured object W of the specified quantity caudad.
[0003] Two or more cylindrical shape-like measurement hoppers 47 are formed in the fall position of this measured object W. This measurement hopper 47 is laid on the bottom plate 48 which became independent respectively. The bottom plate 48 is connected with measurement load cell 48a prepared in the case 41 interior, and measurement load cell 48a measures the measured object W. And by combining the measured value of each measurement hopper 47, a desired measured value can be obtained, the specified measurement hopper 47 is moved ahead [bottom plate 48] by extension of a cylinder 49, and the internal measured object W is dropped. The plate-like set board 52 is formed in the lower position of the measurement hopper 47. On the set board 52, the scraper 53 which gathers up the measured object W of this set board 52 upper part in the center section is formed. The measured object W collected by the scraper 53 is taken out by the following process through set chute 52a.
[0004]
[Problem(s) to be Solved by the Invention] however, in this combination weigh machine, about one sort of measured objects W thrown in from the injection hopper 42 That this measured object W should be made a predetermined weight, after subdividing at a process in the middle of the pool hopper 45 and the measurement hopper 47 Since it was the composition which gathers with a scraper 53 on the set board 52 again, and is discharged from set chute 52a after obtaining a predetermined weight combining measurement hopper 47 comrades of a weight value, only one sort of measured objects W were immeasurable by one set. Thereby, in this combination weigh machine, mix measurement of two or more sorts of measured objects was not able to be carried out. In order to carry out mix measurement, it was what the processing time starts and takes many installation spaces while mix work is done with another equipment in which the measured objects discharged from each combination weigh machine are prepared by the latter part and two or more [a total of] sets of equipments are required.

[0005] While being able to accomplish this invention in view of the above-mentioned situation and being able to carry out mix measurement of two or more sorts of measured objects by one set, this mix measurement aims at offering the combination weigh machine which can be efficiently performed by the distribution ratio which was able to define each measured object.

[0006]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the combination weigh machine of this invention The injection hoppers 2a and 2b with which the measured objects W1 and W2 of a form different, respectively are thrown in according to a system, Every according to a system in the lower berth of these injection hoppers 2a and 2b, respectively The pool hopper 5 which is formed, is formed in the shape of telescopic, carries out the specified quantity reservoir of the measured objects W1 and W2, and is supplied to the lower berth, [two or more] The measurement hopper 7 which measures the measured objects W1 and W2 of the specified quantity which is prepared in the lower berth corresponding to each of this pool hopper 5, is formed in the shape of a cartridge, and is supplied from this pool hopper 5, and is supplied to the lower berth by being chosen, The control section 20 which performs combination used as a predetermined weight and chooses the corresponding measurement hopper 7 according to each system about the measured objects W1 and W2 measured with this measurement hopper 7, After gathering the measured objects W1 and W2 supplied from the measurement hopper 7 by which selection was carried out [aforementioned], it is characterized by providing the set equipment 12 discharged outside.

[0007]

[Function] According to the above-mentioned composition, after the measured objects W1 and W2 of a different form are fed into the injection hoppers 2a and 2b of another system, respectively, they are supplied to the specified quantity [every] measurement hopper 7 with the pool hopper 5. A control section 20 chooses the measurement hopper 7 for becoming the predetermined weight beforehand defined according to each system, and discharges the measured objects W1 and W2 in this selected measurement hopper 7 on set equipment 12. Set equipment 12 mixes the measured objects W1 and W2 for every predetermined weight of these, and discharges them outside.

[0008]

[Example] the perspective diagram in which drawing 1 shows the combination weigh machine of this invention, and drawing 2 -- a part of this weigh machine -- decision front view and drawing 3 -- a part of this weigh machine -- it is a decision side elevation The equipment case 1 is formed in the shape of a plane-cross-section rectangle. And the injection hoppers 2a and 2b of plurality (this example two) with which the upper part expanded the diameter and opening was carried out are formed in the topmost part of the equipment case 1. Considering as the moving trucking of the bucket lifters 3a and 3b which loaded the measured objects W1 and W2 of a respectively different kind above these injection hoppers 2a and 2b, these bucket lifters 3a and 3b rotate in injection hopper 2a and a 2b up position, and feed respectively the internal measured objects W1 and W2 into the injection hoppers 2a and 2b.

[0009] Respectively, oblong, by predetermined length, the injection hoppers 2a and 2b are formed, and the supply screw 4 of every plurality is located in a line, and they are arranged at the lower part by which opening was carried out. Moreover, injection hopper 2a and diaphragm 2c which is between 2b and prevents the inflow the measured object W1 and between W2 on guide way 4b of the supply screw 4 are set up.

[0010] The supply screw 4 is connected with motor 4a prepared back [case 1], and moves the measured objects W1 and W2 to weigh-machine front from injection hopper 2a and a 2b lower position at the time of rotation. The pool hopper 5 is formed in this supply screw 4 front-end section position. Two or more (corresponding to the aforementioned supply screw 4 respectively) these pool hoppers 5 are laid on bottom plate 5a of fixation in a case 1.

[0011] This pool hopper 5 is a cylindrical shape-like, and the upper-limit section is formed at least to the height more than guide way 4b of the aforementioned supply screw 4. Engagement presser-foot-stitch-tongue 5b is prepared in the posterior part of this pool hopper 5. And engagement

presser-foot-stitch-tongue 6b which a cylinder 6 is formed in a case 1 and prepared in this rod 6a front end section is engaging with engagement presser-foot-stitch-tongue 5b of the aforementioned pool hopper 5.

[0012] Two or more cylindrical shape-like measurement hoppers 7 are formed in this pool hopper front end lower position. this measurement hopper 7 is formed corresponding to the pool hopper 5 of each above, and is laid on the bottom plate 8 which became independent respectively The bottom plate 8 is connected with measurement load cell 8a prepared in the case 1 interior, and this measurement load cell 8a measures the measured objects W1 and W2 in the measurement hopper 7 so that it may mention later.

[0013] Ring 7a for ****** is prepared in the periphery of this measurement hopper 7. Moreover, the arm 10 which a cylinder 9 is formed in the case 1 interior, and is prepared in this rod 9a front end section can pinch the measurement hopper 7 freely.

[0014] set equipment 12 is formed in the lower position of the measurement hopper 7 of these each Set equipment 12 is formed on plate-like set board 12a. Frame 12c the measured object W1 and for W2 scattering prevention is prepared in the circumference of set board 12a. On this set board 12a, the scraper 13 which gathers up the measured objects W and W2 of this set board 12a upper part in the center section is formed. This scraper 13 is constituted by the rotation arms 13a and 13b of a right-and-left couple, and when the amount of [in the case 1 interior] rotation core drives, these rotation arms 13a and 13b gather up the measured objects W1 and W2 which fell from each measurement hopper 7, and it drops them from central set chute 12b. Eccrisis gate 12d is prepared in a set chute 12b lower position, and the measured objects W1 and W2 are discharged on the conveyer 14 for the following process taking out by opening which is eccrisis gate 12d.

[0015] Next, what is shown in drawing 4 is the functional block diagram showing a control section 20. Corresponding to each measured objects W1 and W2, the two combination setting sections 21a and 21b are formed. In addition, these two combination processing sections 21a and 21b can share and constitute CPU, a storage element, etc. First, about the measured objects W1 and W2, each weight is set up by W1 weight setting section 27a of the weight setting section 27, and amount setting section of W duplexs 27b, and these set points are inputted into distinction section 25a of the combination processing sections 21a and 21b.

[0016] If one combination processing section 21a is explained, this combination processing section 21a will perform combination processing about the measured object W1. Emission-control equipment 22a carries out the selection control of the cylinder 9 which operates each measurement hopper 7. The measured value of the measured object W1 outputted from each measurement hopper 7 is memorized by measurement storage section 23a. Combination calculation section 24a computes the combination weight of each measured value W1 in all different combination. Distinction section 25a measures the combination weight output and the setting weight output of W1 weight setting section 27a which were computed by combination calculation section 24a, and among combination weight outputs, the difference of a setting weight distinguishes the smallest combination and it outputs a combination sorting signal to emission-control equipment 22a. Therefore, emission-control equipment 22a operates the cylinder 9 corresponding to the measurement hopper 7 chosen by the combination sorting signal, and discharges the measured object W1 in the measurement hopper 7 on the set board 22. The discharged measured object W1 is equal to a setting weight.

[0017] Combination processing section 21b of another side measures by combining about the measured object W2. Therefore, a predetermined distribution ratio can be defined to these two combination processing sections 21a and 21b by setting up respectively the setting weight about the measured objects W1 and W2 in the weight setting section 27.

[0018] Next, combination measurement operation of the combination weigh machine by the above-mentioned composition is explained. First, that the injection hoppers 2a and 2b should always store the objects W1 and W2 measured [specified quantity / every], the bucket lifters 3a and 3b loading the measured objects W1 and W2 move to an up position to predetermined timing, and feed the internal measured objects W1 and W2 into the injection hoppers 2a and 2b after this, respectively.

[0019] A mutual inflow is prevented by diaphragm 2c and the measured objects W1 and W2 after an injection are hereafter measured for the objects W1 and W2 measured [these] by the counter mechanism (the conveyance screw 4, the pool hopper 5, the measurement hopper 7, a cylinder 6, 9 grades) of another system prepared by separating into the lower berth, respectively. The measured objects W1 and W2 are moved to the pool hopper 5 interior by the supply screw 4 from an injection hopper 2 lower position. Here, the measured objects W1 and W2 of an amount which always fill content volume are supplied to the pool hopper 5 by the aforementioned supply screw 4. And the measured objects W1 and W2 made into the specified quantity with these pool hopper 5 are transferred to the measurement hopper 7 by the operation of a cylinder 6. In addition, while the pool hopper 5 has projected, the supply screw 4 has stopped. The measured objects W1 and W2 of each measurement hopper 7 are measured in measurement load cell 8a, and this value is outputted to a control section 20, respectively.

[0020] And an operator chooses a control section 20 according to the measured object W1 and W2 combining the measurement hopper 7 which is in agreement with the weight of each measured objects W1 and W2 defined beforehand. these measured objects W1 and W2 -- each weight value is the weight finally discharged, and the objects W1 and W2 measured [these] will be discharged after mixture by the predetermined distribution ratio And the cylinder 9 corresponding to the selected measurement hopper 7 operates, and these measured objects W1 and W2 make it fall on the set board 12 altogether. These measured objects W1 and W2 that fell are respectively final combination weights, and always let them be predetermined distribution ratios. After the objects W1 and W2 measured [these] are gathered up by the scraper 13, they are discharged on a conveyer 14 in the state where it was mixed from eccrisis gate 12b. A conveyer 14 takes out the mixed measured objects W1 and W2 for packing etc. at the following process.

[0021] In the above-mentioned example, although the measured object W mixed was the explanation which is two forms W1 and W2, if it controls by composition which divided one set of a combination weigh machine into two lines, and it polyphyletic-izes by increasing the number of hoppers, mix measurement can be carried out about the measured object of much more forms.

[0022]

[Effect of the Invention] According to the combination weigh machine of this invention, the equipment below an injection hopper is constituted according to a system, and it measures by the predetermined combination weight respectively, and since it is the composition which mixes and discharges this on a set board, mix measurement of two or more sorts of measured objects can be carried out by this one weigh machine. Moreover, this mix measurement can be efficiently performed by the distribution ratio which was able to define each measured object. Furthermore, the special equipment for mix measurement cannot be needed, but space efficiency can be raised.

[Translation done.]

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TECHNICAL FIELD

[Industrial Application] this invention relates to the combination weigh machine which discharges measured objects, such as food, outside for every constant-rate measurement.

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PRIOR ART

[Description of the Prior Art] What is shown in drawing 5 is the perspective diagram showing the combination weigh machine of Japanese Patent Application No. No. 203535 [three to]. As for this combination weigh machine, the measured object W by which the injection hopper 42 was formed and has been conveyed by conveyer 43 is thrown into the topmost part of the equipment case 41. Two or more conveyance screws 44 are located in a line, and are arranged at the lower part of the injection hopper 42. This conveyance screw 44 conveys the measured object W to the front-face side of equipment. The cylindrical shape-like pool hopper 45 is respectively formed in the conveyance screw 44 point position. Two or more these pool hoppers 45 are laid on bottom plate 45a of fixation in a case 41, where the measured object W is held, they move ahead from bottom plate 45a by extension of a cylinder 46, and they drop the measured object W of the specified quantity caudad.
[0003] Two or more cylindrical shape-like measurement hoppers 47 are formed in the fall position of this measured object W. This measurement hopper 47 is laid on the bottom plate 48 which became independent respectively. The bottom plate 48 is connected with measurement load cell 48a prepared in the case 41 interior, and measurement load cell 48a measures the measured object W. And by combining the measured value of each measurement hopper 47, a desired measured value can be obtained, the specified measurement hopper 47 is moved ahead [bottom plate 48] by extension of a cylinder 49, and the internal measured object W is dropped. The plate-like set board 52 is formed in the lower position of the measurement hopper 47. On the set board 52, the scraper 53 which gathers up the measured object W of this set board 52 upper part in the center section is formed. The measured object W collected by the scraper 53 is taken out by the following process through set chute 52a.

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EFFECT OF THE INVENTION

[Effect of the Invention] According to the combination weigh machine of this invention, the equipment below an injection hopper is constituted according to a system, and it measures by the predetermined combination weight respectively, and since it is the composition which mixes and discharges this on a set board, mix measurement of two or more sorts of measured objects can be carried out by this one weigh machine. Moreover, this mix measurement can be efficiently performed by the distribution ratio which was able to define each measured object. Furthermore, the special equipment for mix measurement cannot be needed, but space efficiency can be raised.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] however, in this combination weigh machine, about one sort of measured objects W thrown in from the injection hopper 42 That this measured object W should be made a predetermined weight, after subdividing at a process in the middle of the pool hopper 45 and the measurement hopper 47 Since it was the composition which gathers with a scraper 53 on the set board 52 again, and is discharged from set chute 52a after obtaining a predetermined weight combining measurement hopper 47 comrades of a weight value, only one sort of measured objects W were immeasurable by one set. Thereby, in this combination weigh machine, mix measurement of two or more sorts of measured objects was not able to be carried out. In order to carry out mix measurement, it was what the processing time starts and takes many installation spaces while mix work is done with another equipment in which the measured objects discharged from each combination weigh machine are prepared by the latter part and two or more [a total of] sets of equipments are required.
[0005] While being able to accomplish this invention in view of the above-mentioned situation and being able to carry out mix measurement of two or more sorts of measured objects by one set, this mix measurement aims at offering the combination weigh machine which can be efficiently performed by the distribution ratio which was able to define each measured object.

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MEANS

[Means for Solving the Problem] In order to attain the above-mentioned purpose, the combination weigh machine of this invention is characterized by having the following. The injection hoppers 2a and 2b with which the measured objects W1 and W2 of a form different, respectively are thrown in according to a system. The pool hopper 5 which are formed in the lower berth of these injection hoppers 2a and 2b every according to a system, respectively, is formed in the shape of telescopic, carries out the specified quantity reservoir of the measured objects W1 and W2, and is supplied to the lower berth. [two or more] The measurement hopper 7 which measures the measured objects W1 and W2 of the specified quantity which is prepared in the lower berth corresponding to each of this pool hopper 5, is formed in the shape of a cartridge, and is supplied from this pool hopper 5, and is supplied to the lower berth by being chosen, The control section 20 which performs combination used as a predetermined weight and chooses the corresponding measurement hopper 7 according to each system about the measured objects W1 and W2 measured with this measurement hopper 7, Set equipment 12 discharged outside after gathering the measured objects W1 and W2 supplied from the measurement hopper 7 by which selection was carried out [aforementioned].

[Translation done.]

* NOTICES *

OPERATION

[Function] According to the above-mentioned composition, after the measured objects W1 and W2 of a different form are fed into the injection hoppers 2a and 2b of another system, respectively, they are supplied to the specified quantity [every] measurement hopper 7 with the pool hopper 5. A control section 20 chooses the measurement hopper 7 for becoming the predetermined weight beforehand defined according to each system, and discharges the measured objects W1 and W2 in this selected measurement hopper 7 on set equipment 12. Set equipment 12 mixes the measured objects W1 and W2 for every predetermined weight of these, and discharges them outside.

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EXAMPLE

[Example] the perspective diagram in which drawing 1 shows the combination weigh machine of this invention, and drawing 2 -- a part of this weigh machine -- decision front view and drawing 3 -- a part of this weigh machine -- it is a decision side elevation The equipment case 1 is formed in the shape of a plane-cross-section rectangle. And the injection hoppers 2a and 2b of plurality (this example two) with which the upper part expanded the diameter and opening was carried out are formed in the topmost part of the equipment case 1. Considering as the moving trucking of the bucket lifters 3a and 3b which loaded the measured objects W1 and W2 of a respectively different kind above these injection hoppers 2a and 2b, these bucket lifters 3a and 3b rotate in injection hopper 2a and a 2b up position, and feed respectively the internal measured objects W1 and W2 into the injection hoppers 2a and 2b.
[0009] Respectively, oblong, by predetermined length, the injection hoppers 2a and 2b are formed, and the supply screw 4 of every plurality is located in a line, and they are arranged at the lower part by which opening was carried out. Moreover, injection hopper 2a and diaphragm 2c which is between 2b and prevents the inflow the measured object W1 and between W2 on guide way 4b of the supply screw 4 are set up.
[0010] The supply screw 4 is connected with motor 4a prepared back [case 1], and moves the measured objects W1 and W2 to weigh-machine front from injection hopper 2a and a 2b lower position at the time of rotation. The pool hopper 5 is formed in this supply screw 4 front-end section position. Two or more (corresponding to the aforementioned supply screw 4 respectively) these pool hoppers 5 are laid on bottom plate 5a of fixation in a case 1.
[0011] This pool hopper 5 is a cylindrical shape-like, and the upper-limit section is formed at least to the height more than guide way 4b of the aforementioned supply screw 4. Engagement presser-foot-stitch-tongue 5b is prepared in the posterior part of this pool hopper 5. And engagement presser-foot-stitch-tongue 6b which a cylinder 6 is formed in a case 1 and prepared in this rod 6a front end section is engaging with engagement presser-foot-stitch-tongue 5b of the aforementioned pool hopper 5.
[0012] Two or more cylindrical shape-like measurement hoppers 7 are formed in this pool hopper front end lower position. this measurement hopper 7 is formed corresponding to the pool hopper 5 of each above, and is laid on the bottom plate 8 which became independent respectively The bottom plate 8 is connected with measurement load cell 8a prepared in the case 1 interior, and this measurement load cell 8a measures the measured objects W1 and W2 in the measurement hopper 7 so that it may mention later.
[0013] Ring 7a for ****** is prepared in the periphery of this measurement hopper 7. Moreover, the arm 10 which a cylinder 9 is formed in the case 1 interior, and is prepared in this rod 9a front end section can pinch the measurement hopper 7 freely.
[0014] set equipment 12 is formed in the lower position of the measurement hopper 7 of these each Set equipment 12 is formed on plate-like set board 12a. Frame 12c the measured object W1 and for W2 scattering prevention is prepared in the circumference of set board 12a. On this set board 12a, the scraper 13 which gathers up the measured objects W and W2 of this set board 12a upper part in the center section is formed. This scraper 13 is constituted by the rotation arms 13a and 13b of a right-and-left couple, and when the amount of [in the case 1 interior] rotation core drives, these rotation arms 13a and 13b gather

up the measured objects W1 and W2 which fell from each measurement hopper 7, and it drops them from central set chute 12b. Eccrisis gate 12d is prepared in a set chute 12b lower position, and the measured objects W1 and W2 are discharged on the conveyer 14 for the following process taking out by opening which is eccrisis gate 12d.

[0015] Next, what is shown in drawing 4 is the functional block diagram showing a control section 20. Corresponding to each measured objects W1 and W2, the two combination setting sections 21a and 21b are formed. In addition, these two combination processing sections 21a and 21b can share and constitute CPU, a storage element, etc. First, about the measured objects W1 and W2, each weight is set up by W1 weight setting section 27a of the weight setting section 27, and amount setting section of W duplexs 27b, and these set points are inputted into distinction section 25a of the combination processing sections 21a and 21b.

[0016] If one combination processing section 21a is explained, this combination processing section 21a will perform combination processing about the measured object W1. Emission-control equipment 22a carries out the selection control of the cylinder 9 which operates each measurement hopper 7. The measured value of the measured object W1 outputted from each measurement hopper 7 is memorized by measurement storage section 23a. Combination calculation section 24a computes the combination weight of each measured value W1 in all different combination. Distinction section 25a measures the combination weight output and the setting weight output of W1 weight setting section 27a which were computed by combination calculation section 24a, and among combination weight outputs, the difference of a setting weight distinguishes the smallest combination and it outputs a combination sorting signal to emission-control equipment 22a. Therefore, emission-control equipment 22a operates the cylinder 9 corresponding to the measurement hopper 7 chosen by the combination sorting signal, and discharges the measured object W1 in the measurement hopper 7 on the set board 22. The discharged measured object W1 is equal to a setting weight.

[0017] Combination processing section 21b of another side measures by combining about the measured object W2. Therefore, a predetermined distribution ratio can be defined to these two combination processing sections 21a and 21b by setting up respectively the setting weight about the measured objects W1 and W2 in the weight setting section 27.

[0018] Next, combination measurement operation of the combination weigh machine by the above-mentioned composition is explained. First, that the injection hoppers 2a and 2b should always store the objects W1 and W2 measured [specified quantity / every], the bucket lifters 3a and 3b loading the measured objects W1 and W2 move to an up position to predetermined timing, and feed the internal measured objects W1 and W2 into the injection hoppers 2a and 2b after this, respectively.

[0019] A mutual inflow is prevented by diaphragm 2c and the measured objects W1 and W2 after an injection are hereafter measured for the objects W1 and W2 measured [these] by the counter mechanism (the conveyance screw 4, the pool hopper 5, the measurement hopper 7, a cylinder 6, 9 grades) of another system prepared by separating into the lower berth, respectively. The measured objects W1 and W2 are moved to the pool hopper 5 interior by the supply screw 4 from an injection hopper 2 lower position. Here, the measured objects W1 and W2 of an amount which always fill content volume are supplied to the pool hopper 5 by the aforementioned supply screw 4. And the measured objects W1 and W2 made into the specified quantity with these pool hopper 5 are transferred to the measurement hopper 7 by the operation of a cylinder 6. In addition, while the pool hopper 5 has projected, the supply screw 4 has stopped. The measured objects W1 and W2 of each measurement hopper 7 are measured in measurement load cell 8a, and this value is outputted to a control section 20, respectively.

[0020] And an operator chooses a control section 20 according to the measured object W1 and W2 combining the measurement hopper 7 which is in agreement with the weight of each measured objects W1 and W2 defined beforehand. these measured objects W1 and W2 -- each weight value is the weight finally discharged, and the objects W1 and W2 measured [these] will be discharged after mixture by the predetermined distribution ratio And the cylinder 9 corresponding to the selected measurement hopper 7 operates, and these measured objects W1 and W2 make it fall on the set board 12 altogether. These measured objects W1 and W2 that fell are respectively final combination weights, and always let them be

predetermined distribution ratios. After the objects W1 and W2 measured [these] are gathered up by the scraper 13, they are discharged on a conveyer 14 in the state where it was mixed from eccrisis gate 12b. A conveyer 14 takes out the mixed measured objects W1 and W2 for packing etc. at the following process.
[0021] In the above-mentioned example, although the measured object W mixed was the explanation which is two forms W1 and W2, if it controls by composition which divided one set of a combination weigh machine into two lines, and it polyphyletic-izes by increasing the number of hoppers, mix measurement can be carried out about the measured object of much more forms.

[Translation done.]

* NOTICES *

DESCRIPTION OF DRAWINGS

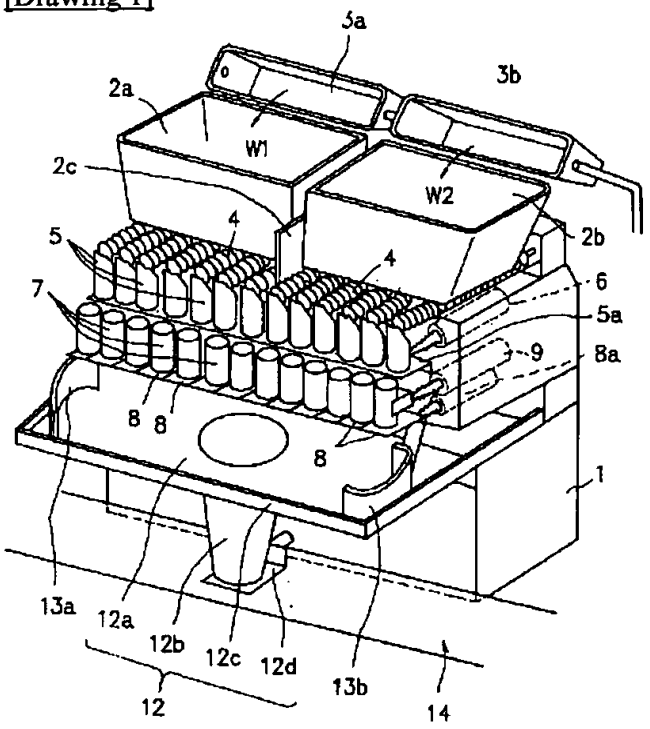
[Brief Description of the Drawings]
[Drawing 1] The perspective diagram showing the combination weigh machine of this invention.
[Drawing 2] This weigh machine is decision front view a part.
[Drawing 3] This weigh machine is a decision side elevation a part.
[Drawing 4] The functional block diagram showing a control section.
[Drawing 5] The perspective diagram showing the conventional combination weigh machine.
[Description of Notations]
1 [-- A bucket lifter, 4 / -- A supply screw, 5 / -- A pool hopper, 7 / -- A measurement hopper, 12 / -- Set equipment, 13 / -- A scraper, 14 / -- A conveyer, 20 / -- A control section, W1 W2 / -- Measured object.] -- An equipment case, 2a, 2b -- An injection hopper, 3a, 3b

[Translation done.]

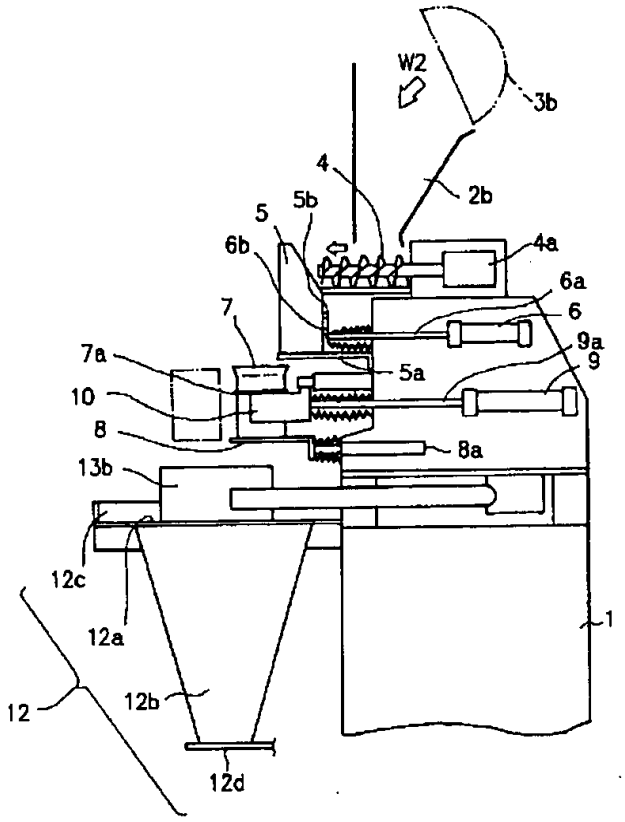
* NOTICES *

DRAWINGS

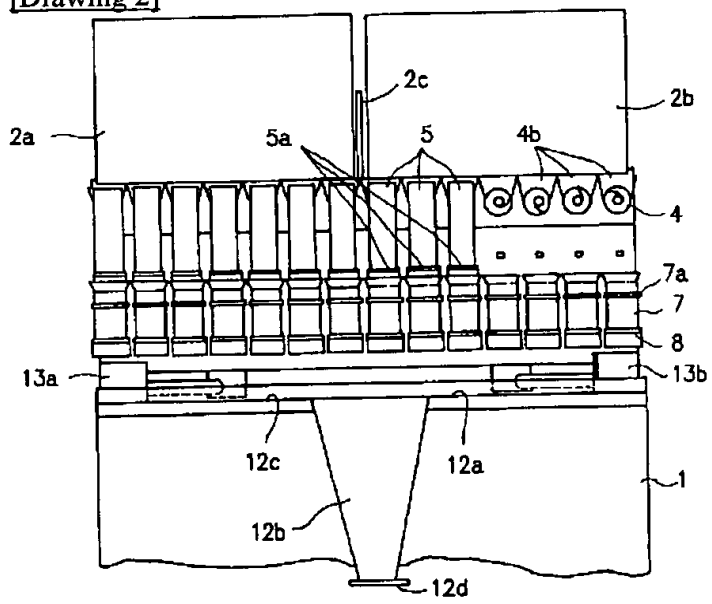
[Drawing 1]



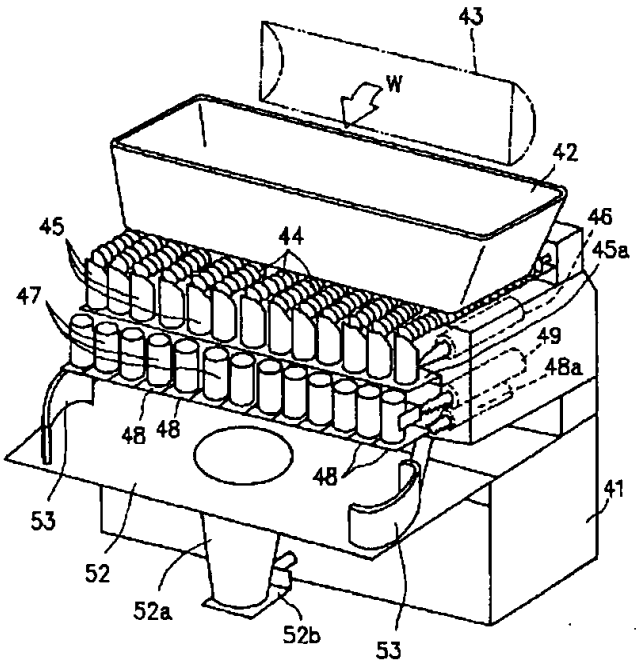
[Drawing 3]



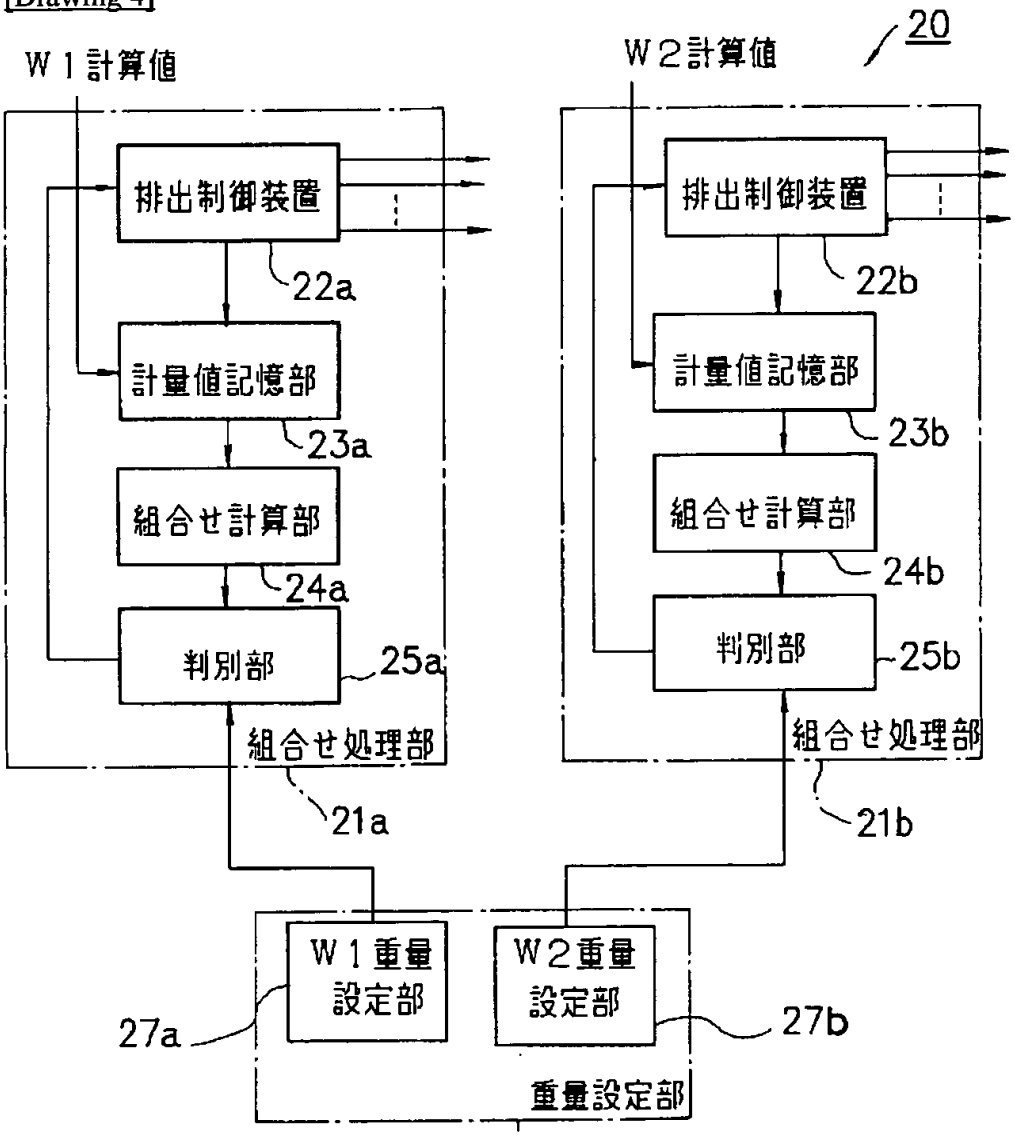
[Drawing 2]



[Drawing 5]


43
W
42
46
45a
45
44
47
49
48a
48
48
48
53
52
52a
52b
53
41

[Drawing 4]


20
W１計算値
W２計算値
排出制御装置
排出制御装置
22a
22b
計量値記憶部
計量値記憶部
23a
23b
組合せ計算部
組合せ計算部
24a
24b
判別部
判別部
25a
25b
組合せ処理部
組合せ処理部
21a
21b
W１重量設定部
W２重量設定部
27a
27b
重量設定部

[Translation done.]

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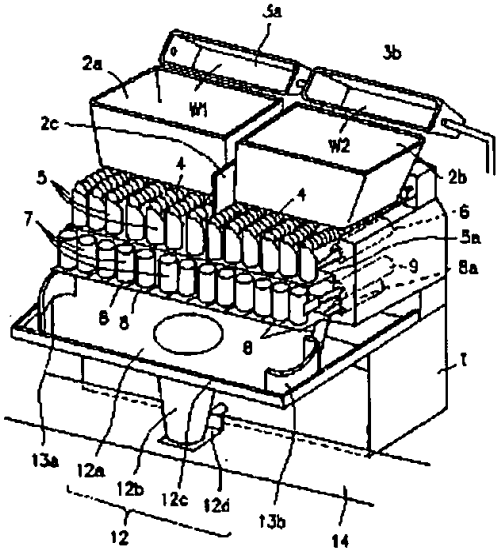
(54)【発明の名称】　組合せ計量機

(57)【要約】

【目的】　異なる品種の被計量物を夫々、所定重量、所定配分でミックス計量できること。

【構成】　被計量物Ｗ１、Ｗ２が個別に投入される投入ホッパ２ａ，２ｂ以下、下段の計量機構は２系統で構成される。被計量物Ｗ１，Ｗ２は、夫々プールホッパ５で所定量に細分化され計量ホッパ７で各々計量される。制御部は、これら細分化された計量値を組み合わせて各被計量物Ｗ１，Ｗ２別に所定重量とすべく、計量ホッパ７を選択する。計量ホッパ７内の被計量物Ｗ１，Ｗ２は集合装置１２上で混合され、外部に排出される。排出は、被計量物Ｗ１，Ｗ２が夫々所定の配分比率で行われる。



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【特許請求の範囲】

【請求項1】　夫々異なる品種の被計量物（W1），（W2）が系統別に投入される投入ホッパ（2a），（2b）と，

該投入ホッパの下段に夫々，系統別に複数個づつ設けられ，筒型状に形成され被計量物を所定量貯留して下段に供給するプールホッパ（5）と，

該各プールホッパに対応する下段に設けられ，筒形状に形成され該プールホッパから供給される所定量の被計量物を計量し，選択されることにより下段に供給する計量ホッパ（7）と，

該計量ホッパで計量された被計量物について各々の系統別に所定の重量となる組合せを行い，該当する計量ホッパを選択する制御部（20）と，

前記選択された計量ホッパより供給された被計量物を集合させた後，外部に排出する集合装置（12）と，

を具備したことを特徴とする組合せ計量機。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は，食品等の被計量物を一定量計量毎に外部に排出する組合せ計量機に関する。

【0002】

【従来の技術】図5に示すのは，特願平3－203535号の組合せ計量機を示す斜視図である。この組合せ計量機は，装置筐体41の最上部には，投入ホッパ42が設けられ，コンベア43で搬送されてきた被計量物Wが投入される。投入ホッパ42の下部には，複数の搬送スクリュー44が並んで配置される。この搬送スクリュー44は，被計量物Wを装置前面側に搬送する。搬送スクリュー44先端部位置には，各々円筒形状のプールホッパ45が設けられている。このプールホッパ45は，筐体41に固定の底板45a上に複数個載置され，被計量物Wを収容した状態でシリンダ46の伸張により底板45aより前方に移動して所定量の被計量物Wを下方に落下させる。

【0003】この被計量物Wの落下位置には，円筒形状の計量ホッパ47が複数個設けられている。この計量ホッパ47は，各々独立した底板48上に載置されている。底板48は，筐体41内部に設けられた計量ロードセル48aに連結されており，計量ロードセル48aは，被計量物Wを計量する。そして，各計量ホッパ47の計量値を組み合わせることにより，所望の計量値を得ることができ，指定された計量ホッパ47がシリンダ49の伸張により底板48前方に移動され，内部の被計量物Wを落下させる。計量ホッパ47の下部位置には，平板状の集合板52が設けられている。集合板52上には，この集合板52上部の被計量物Wを中央部にかき集めるスクレーパ53が設けられている。スクレーパ53により集められた被計量物Wは，集合シュート52aを介し次工程に排出される。

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【0004】

【発明が解決しようとする課題】しかしながら，この組合せ計量機では，投入ホッパ42から投入される1種の被計量物Wについて，この被計量物Wを所定重量とすべく，プールホッパ45，計量ホッパ47の途中工程で細分化した後に，重量値の計量ホッパ47同士を組み合わせて所定重量を得た後，再び集合板52上でスクレーパ53により集合され集合シュート52aより排出される構成であるため，1台で1種の被計量物Wしか計量できなかった。これにより，この組合せ計量機では，2種以上の被計量物をミックス計量することができなかった。ミックス計量するためには，夫々の組合せ計量機から排出された被計量物同士を後段に設けられる別の装置でミックス作業しており，合計複数台の装置が必要であるとともに，処理時間がかかり設置スペースを多くとるものであった。

【0005】本発明は，上記事情に鑑みて成されたものであり，1台で2種以上の被計量物をミックス計量することができるとともに，このミックス計量は，各々の被計量物を定められた配分比率で効率的に行うことができる組合せ計量機を提供することを目的としている。

【0006】

【課題を解決するための手段】上記目的を達成するため，本発明の組合せ計量機は，夫々異なる品種の被計量物W1，W2が系統別に投入される投入ホッパ2a，2bと，該投入ホッパ2a，2bの下段に夫々，系統別に複数個づつ設けられ，筒型状に形成され被計量物W1，W2を所定量貯留して下段に供給するプールホッパ5と，該各プールホッパ5に対応する下段に設けられ，筒形状に形成され該プールホッパ5から供給される所定量の被計量物W1，W2を計量し，選択されることにより下段に供給する計量ホッパ7と，該計量ホッパ7で計量された被計量物W1，W2について各々の系統別に所定の重量となる組合せを行い，該当する計量ホッパ7を選択する制御部20と，前記選択された計量ホッパ7より供給された被計量物W1，W2を集合させた後，外部に排出する集合装置12と，を具備したことを特徴とする。

【0007】

【作用】上記構成によれば，異なる品種の被計量物W1，W2は，夫々別系統の投入ホッパ2a，2bに投入された後，プールホッパ5で所定量づつ計量ホッパ7に供給される。制御部20は，各系統別に予め定めた所定重量となるための計量ホッパ7を選択して，この選択された計量ホッパ7内の被計量物W1，W2を集合装置12上に排出する。集合装置12は，これら所定重量毎の被計量物W1，W2をミックスして外部に排出する。

【0008】

【実施例】図1は，本発明の組合せ計量機を示す斜視図，図2は，同計量機の一部截断正面図，図3は，同計

量機の一部截断側面図である。装置筐体１は、平断面長方形状に形成される。そして、装置筐体１の最上部には、上方が拡径して開口された複数（この実施例では２つ）の投入ホッパ２ａ，２ｂが設けられている。この投入ホッパ２ａ，２ｂの上方には、各々異なる種類の被計量物Ｗ１，Ｗ２を積載したバケットリフタ３ａ，３ｂの移動経路とされ、このバケットリフタ３ａ，３ｂは、投入ホッパ２ａ，２ｂ上部位置にて回動し内部の被計量物Ｗ１，Ｗ２を各々投入ホッパ２ａ，２ｂに投入する。

【０００９】投入ホッパ２ａ，２ｂのは、各々横長に所定長さで形成され、開口された下部には、各々複数個づつの供給スクリュー４が並んで配置されている。また、投入ホッパ２ａ，２ｂ間でかつ、供給スクリュー４のガイド路４ｂ上には、被計量物Ｗ１，Ｗ２相互の流入を防ぐ仕切り板２ｃが立設されている。

【００１０】供給スクリュー４は、筐体１背部に設けられたモータ４ａに連結され、回転時に被計量物Ｗ１，Ｗ２を投入ホッパ２ａ，２ｂ下部位置から計量機前方向に移動させるものである。この供給スクリュー４前端部位置には、プールホッパ５が設けられる。このプールホッパ５は、筐体１に固定の底板５ａ上に複数個（前記供給スクリュー４に各々対応して）載置されている。

【００１１】このプールホッパ５は、円筒形状でかつ上端部は少なくとも前記供給スクリュー４のガイド路４ｂ以上の高さまで形成されている。このプールホッパ５の後部には係合爪５ｂが設けられる。そして、筐体１には、シリンダ６が設けられ、このロッド６ａ前端部に設けられる係合爪６ｂは、前記プールホッパ５の係合爪５ｂに係合されている。

【００１２】このプールホッパ前端下部位置には、円筒形状の計量ホッパ７が複数個設けられる。この計量ホッパ７は、前記各々のプールホッパ５に対応して設けられており、各々独立した底板８上に載置されている。底板８は、筐体１内部に設けられた計量ロードセル８ａに連結されており、後述する如くこの計量ロードセル８ａは、計量ホッパ７内の被計量物Ｗ１，Ｗ２を計量するものである。

【００１３】この計量ホッパ７の外周には、抜止め用のリング７ａが設けられる。また、筐体１内部にはシリンダ９が設けられ、このロッド９ａ前端部に設けられるアーム１０は、計量ホッパ７を挟持自在である。

【００１４】これら各々の計量ホッパ７の下部位置には、集合装置１２が設けられる。集合装置１２は、平板状の集合板１２ａ上に設けられる。集合板１２ａの周囲には被計量物Ｗ１，Ｗ２飛散防止用の枠体１２ｃが設けられる。この集合板１２ａ上にはこの集合板１２ａ上部の被計量物Ｗ，Ｗ２を中央部にかき集めるスクレーパ１３が設けられている。このスクレーパ１３は、左右一対の回動アーム１３ａ，１３ｂにより構成され、これら回動アーム１３ａ，１３ｂは、筐体１内部での回動中心部

分が駆動されることにより各計量ホッパ７から落下された被計量物Ｗ１，Ｗ２をかき集めて中央の集合シュート１２ｂから落下させる。集合シュート１２ｂ下部位置には排出ゲート１２ｄが設けられ、排出ゲート１２ｄの開口で被計量物Ｗ１，Ｗ２は、次工程搬出用のコンベア１４上に排出される。

【００１５】次に、図４に示すのは、制御部２０を示す機能ブロック図である。各々の被計量物Ｗ１，Ｗ２に対応して２系統の組合せ設定部２１ａ，２１ｂが設けられる。尚、この２系統の組合せ処理部２１ａ，２１ｂは、ＣＰＵ、記憶素子等を共用して構成できる。まず、被計量物Ｗ１，Ｗ２について各々の重量は、重量設定部２７のＷ１重量設定部２７ａ，Ｗ２重量設定部２７ｂで設定され、これら設定値は、組合せ処理部２１ａ，２１ｂの判別部２５ａに入力される。

【００１６】一方の組合せ処理部２１ａについて説明すると、この組合せ処理部２１ａは、被計量物Ｗ１についての組合せ処理を行う。排出制御装置２２ａは、各計量ホッパ７を作動させるシリンダ９を選択制御する。各計量ホッパ７から出力される被計量物Ｗ１の計量値は計量記憶部２３ａに記憶される。組合せ計算部２４ａは、各計量値Ｗ１の組合せ重量を異なるすべての組合せで算出する。判別部２５ａは、組合せ計算部２４ａで算出された組合せ重量出力とＷ１重量設定部２７ａの設定重量出力とを比較し、組合せ重量出力のうち、設定重量の差が最も小さな組合せを判別して、組合せ選別信号を排出制御装置２２ａに出力する。したがって、排出制御装置２２ａは、組合せ選別信号により選択された計量ホッパ７に対応するシリンダ９を作動させ、計量ホッパ７内の被計量物Ｗ１を集合板２２上に排出する。排出された被計量物Ｗ１は、設定重量に等しい。

【００１７】他方の組合せ処理部２１ｂは、被計量物Ｗ２についての組合せ計量を行う。したがって、これら２系統の組合せ処理部２１ａ，２１ｂに対して、重量設定部２７で被計量物Ｗ１，Ｗ２についての設定重量を各々、設定することにより所定の配分比率を定められる。

【００１８】次に、上記構成による組合せ計量機の組合せ計量動作を説明する。まず、被計量物Ｗ１，Ｗ２を積載したバケットリフタ３ａ，３ｂは、投入ホッパ２ａ，２ｂが常に所定量づつ被計量物Ｗ１，Ｗ２を貯留すべく、所定のタイミングで上部位置まで移動し、この後、内部の被計量物Ｗ１，Ｗ２を投入ホッパ２ａ，２ｂに夫々、投入する。

【００１９】投入後の被計量物Ｗ１，Ｗ２は、仕切り板２ｃにより相互の流入が防止され、以下、これら被計量物Ｗ１，Ｗ２は、夫々下段に分離して設けられた別系統の計量機構（搬送スクリュー４，プールホッパ５，計量ホッパ７，シリンダ６，９等）で計量される。被計量物Ｗ１，Ｗ２は、供給スクリュー４により投入ホッパ２下部位置からプールホッパ５内部へ移動される。ここで、

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プールホッパ5には、常に内容積を満たす量の被計量物W1，W2が前記供給スクリュー4により供給されている。そして、これらプールホッパ5で所定量とされた被計量物W1，W2は、シリンダ6の作動により計量ホッパ7に移載される。尚、プールホッパ5が突出している間は供給スクリュー4が停止している。各計量ホッパ7の被計量物W1，W2は、計量ロードセル8aにて計量され、この値は夫々、制御部20に出力される。

【0020】そして、制御部20は、操作者が予め定めた各々の被計量物W1，W2の重量に一致する計量ホッパ7を、被計量物W1，W2別に組み合わせて選択する。この被計量物W1，W2各々の重量値が最終的に排出される重量であり、かつ、これら被計量物W1，W2は所定の配分比率で混合後、排出されることになる。そして、選択された計量ホッパ7に対応するシリンダ9が作動して、これらの被計量物W1，W2が全て集合板12上に落下させる。この落下した被計量物W1，W2は、夫々最終的な組合せ重量でかつ、常に所定の配分比率とすることができる。これら被計量物W1，W2は、スクレーパ13によりかき集められた後、排出ゲート12bからミックスされた状態でコンベア14上に排出される。コンベア14は、ミックスされた被計量物W1，W2を袋詰め等、次工程に搬出する。

【0021】上記実施例では、1台の組合せ計量機を2系統に分割した構成で制御し、ミックスされる被計量物＊

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＊Wが2品種W1，W2である説明であったが、ホッパの数を増やすことにより多系統化すれば、さらに多くの品種の被計量物についてミックス計量することができる。

【0022】

【発明の効果】本発明の組合せ計量機によれば、投入ホッパ以下の装置を系統別に構成して各々所定の組合せ重量で計量し、これを集合板上で混合して排出する構成であるから、本計量機1台で2種以上の被計量物をミックス計量することができる。また、このミックス計量は、各々の被計量物を定められた配分比率で効率的に行うことができる。さらに、ミックス計量のための特別な装置を必要とせず、スペース効率を向上させることができる。

【図面の簡単な説明】

【図1】本発明の組合せ計量機を示す斜視図。

【図2】同計量機の一部截断正面図。

【図3】同計量機の一部截断側面図。

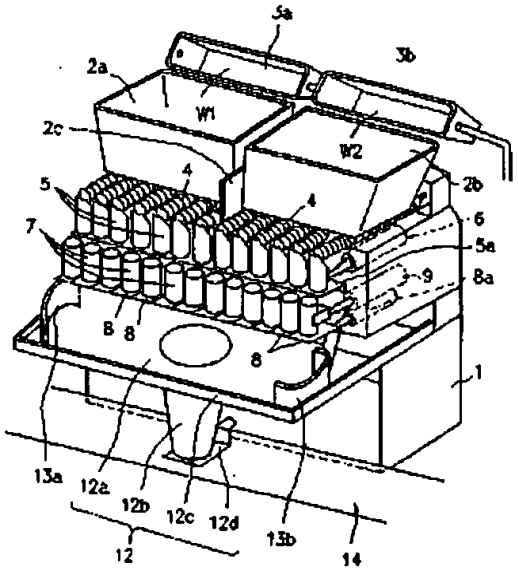
【図4】制御部を示す機能ブロック図。

【図5】従来の組合せ計量機を示す斜視図。

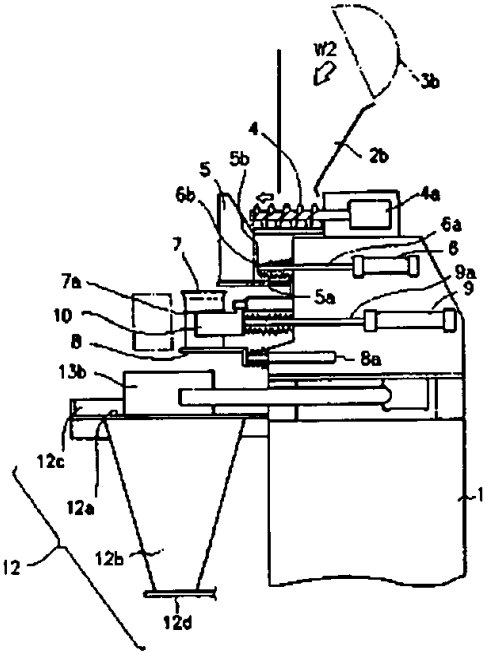
【符号の説明】

1…装置筐体、2a，2b…投入ホッパ、3a，3b…バケットリフタ、4…供給スクリュー、5…プールホッパ、7…計量ホッパ、12…集合装置、13…スクレーパ、14…コンベア、20…制御部、W1，W2…被計量物。

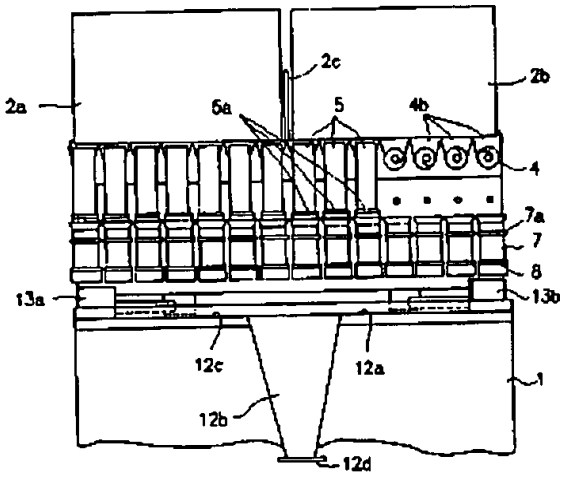
【図1】



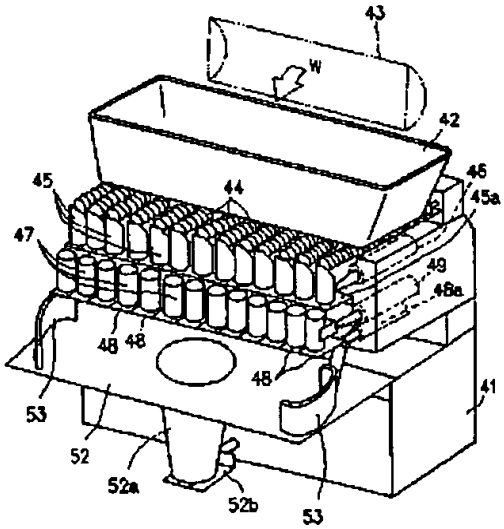
【図3】



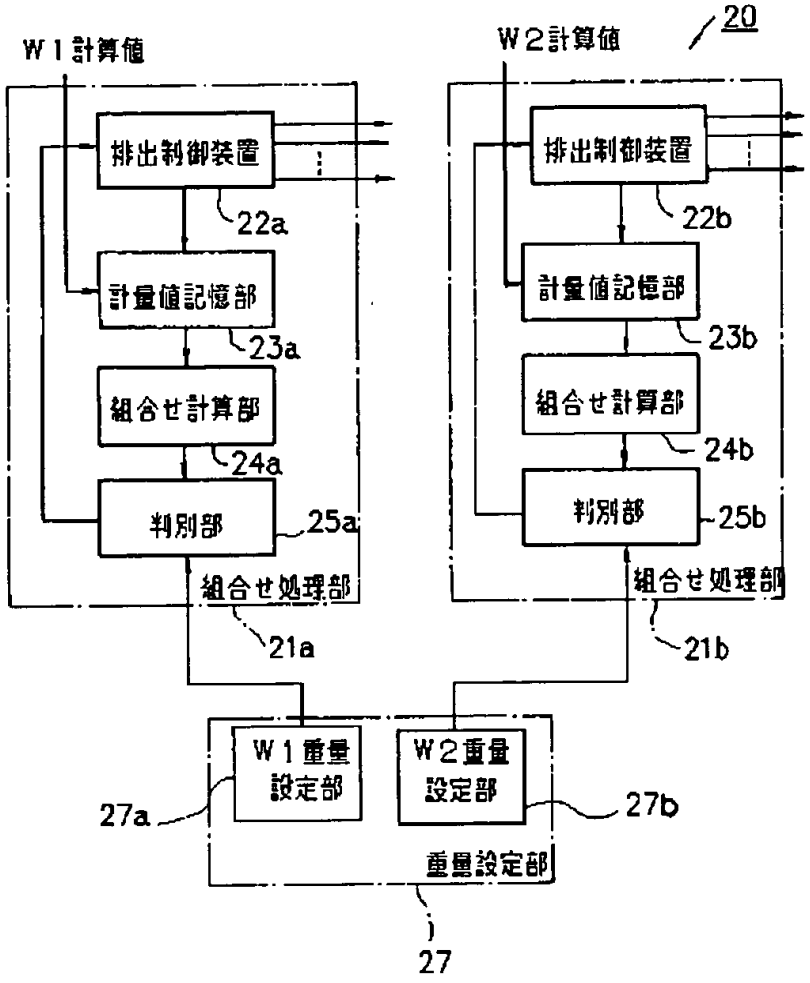
【図2】


2c
2b
2a
6a
5
4b
4
7a
7
8
13a
13b
12c
12a
1
12b
12d

【図5】


43
W
42
46
45a
45
44
47
49
48a
48
48
48
41
53
52
52a
52b
53

【図4】


W1計算値
W2計算値
20
排出制御装置
22a
計量値記憶部
23a
組合せ計算部
24a
判別部
25a
組合せ処理部
21a
排出制御装置
22b
計量値記憶部
23b
組合せ計算部
24b
判別部
25b
組合せ処理部
21b
W1重量設定部
W2重量設定部
27a
27b
重量設定部
27